

EMSA #152

Paramedic Interfacility Transport Guidelines

TABLE OF CONTENTS

1		
2		
3		
4	A. Background	2
5		
6	B. General Principles	3
7		
8	C. Recommendations for Dispatch for Interfacility ALS Emergency Response.....	3
9	Tier One	3
10	Tier Two.....	4
11	D. Interfacility Scheduled Response (Tier Three)	4
12	E. Paramedic Scope of Practice	5
13	Model Expanded Scope of Practice for Paramedic Interfacility Transport Program	7
14	A. Purpose.....	7
15	B. Definition	7
16	C. Staffing.....	7
17	D. Equipment	7
18	E. Responsibility of Transferring Physician	8
19	F. Medical Control	8
20	G. EMSA Approval	8
21	H. Local EMS Agency Approval.....	8
22	I. Recommended Scope of Practice	8
23	J. Recommended Protocols.....	8
24	Intravenous Infusion of Lidocaine	8
25	Intravenous Infusion of Nitroglycerin	9
26	Intravenous Infusion of Heparin	10
27	Intravenous Infusion of Potassium Chloride	10
28	Intravenous Infusion of Amiodarone Hydrochloride.....	11
29	Monitoring of Thoracostomy Tube.....	12
30	Stoma and Tracheostomy Care	12
31	Chemical Sedation	14
32	K. Training Program	15
33	L. Quality Improvement Plan	21
34		
35		
36		

Paramedic Interfacility Transport Guidelines

A. Background

Interfacility transports are a common aspect of the current medical care practice and will likely increase in the future. The Paramedic Interfacility Transport (IFT) Guidelines encourage expanding the use of paramedics under existing paramedic scope of practice for medically appropriate interfacility transports.

A small number of interfacility transports require higher skills and training such as those of a registered nurse (RN) or physician. Due primarily to the difficulty of assuring the timely availability of an RN or MD for such transports, some of these interfacility transports can be appropriately transported by paramedics who have additional training and skills as may be included in a paramedic expanded scope of practice. The Guidelines recommend a standardized paramedic expanded scope of practice as an option for a local EMS agency to allow for increased use of paramedics in the interfacility transports that would be medically appropriate for a paramedic with additional training and skills to perform.

In some instances interfacility transports are necessary from a health care institution to an acute care hospital and are appropriate for the paramedic using the local approved scope of practice but are unscheduled requiring an emergency response. These Guidelines address three (3) levels of dispatch protocols to consider for interfacility transport response and provide a model program for those local EMS agencies choosing this option:

1. Tier One Emergency Response

Summoned through the 9-1-1 system utilizing local approved EMS response. This response is the responsibility of all local EMS systems.

2. Tier Two Emergency Response

A modified emergency response accessed through a designated ~~phone~~ COMMUNICATION link to the ambulance provider, or through the 9-1-1 system with policies in place for a modified EMS system response. Local EMS agencies may choose to develop specified procedures for healthcare facility access to an emergency response (e.g. transport unit only).

3. Tier Three Scheduled Response

Scheduled and medically appropriate ALS interfacility transport. Local EMS agencies may establish IFT Programs for scheduled and medically appropriate transfers utilizing their existing approved scope of practice without additional program approval.

The interfacility transport program should serve as a nexus linking resources and meeting the needs of the various stakeholders involved in the care of patients requiring transfer. To provide quality care, systems must match resources with patient needs. The scope of care for interfacility transport needs to be defined, and levels of providers identified. The selection of personnel, equipment, and credentials should be appropriate for the care needed, rather than based upon convenience or personnel availability. The specific level of resources will vary according to patient condition, transport configuration, and other factors.

B. General Principles

1. Maintain the integrity of the existing 9-1-1 emergency transport system allowing local options for interfacility transport programs.
2. Allow local EMS systems to develop a program to make emergency and scheduled ALS services available to health care facilities for interfacility transportation.
3. Health care facilities are able to access the 9-1-1 emergency transport system for patients requiring emergency medical care not available at the sending facility with either a traditional or modified ALS system response.
4. Local EMS systems may consider the development of a two-tiered emergency response for interfacility transport providing for a modified ALS system response.
5. A local EMS agency may consider the adoption of an IFT program utilizing existing local approved scope of practice.
6. A local EMS agency Medical Director may apply for an expanded scope of practice for its paramedic interfacility transport program. The model IFT Program may serve as a guide with this application.

C. Recommendation for Dispatch for Interfacility ALS Emergency Response

TIER ONE EMERGENCY RESPONSE

A TIER ONE EMERGENCY RESPONSE means a transport request by the sending facility utilizing the 9-1-1 system.

General Principles:

- a. The TIER ONE EMERGENCY RESPONSE should be consistent with the standard ALS dispatch protocol response.
- b. The EMS responders practice within the local ALS scope of practice and within existing EMS system policies and medical oversight.
- c. This level of response is for the transport of an emergent patient from any location including an acute-care hospital to a higher level of care.
- d. ***EMTALA rules apply to all transfers.***

The purpose of a TIER ONE EMERGENCY RESPONSE is to obtain an ALS response for the transport of a patient with a life-threatening condition(s) where the patient's condition may measurably deteriorate by delay in transfer to a higher level of care, as determined by the transferring physician. An example of this response level is transport of a critical trauma patient from a stand-by emergency department to a trauma center. Physicians should reserve 9-1-1 transfers for patients whose conditions may deteriorate while waiting for other transportation.

It is understood the 9-1-1 response may include not only a transport unit but additional first responders as required in local dispatch policy. The receiving specialty care center should have a physician immediately available to respond to transfer requests with the authority to accept patients requiring a higher level of care. The sending facility has an obligation to have the patient ready for transport when the unit arrives and assure specialty support and/or personnel as needed for patient care as determined by the sending physician. There should be system review on all TIER ONE EMERGENCY RESPONSES to assure appropriate utilization of the system.

TIER TWO EMERGENCY RESPONSE

A TIER TWO EMERGENCY RESPONSE means an urgent transport request for the transport of an emergency patient from an acute or sub-acute facility to an acute care hospital for emergency care not available at the sending facility at the direction of a physician when scheduled ALS transportation is unavailable.

General Principles:

- a. Nothing shall preclude a hospital from requesting a TIER ONE EMERGENCY RESPONSE via the 9-1-1 system.
- b. The sending physician maintains the responsibility for determining the level of care necessary for the transport.
- c. Allows flexibility in system status planning and dispatch response protocols.
- d. ***EMTALA rules apply to all transfers.***

Local EMS systems may develop policy and procedures to allow for a modified operational response to address:

- a. First Response Manpower
- b. Access through 9-1-1 or provider phone number
- c. Unit staffing
- d. Response times
- e. Response code

The TIER TWO EMERGENCY RESPONSE should only be used when there is no scheduled interfacility unit available within the timeframes necessary for appropriate patient care. When requesting the transport through the 9-1-1 system, the requesting physician is responsible for communicating the need for a modified emergency response, i.e. transport unit only. The sending facility has an obligation to have the patient ready for transport when the unit arrives and assure specialty support and/or personnel as needed for patient care as determined by the sending physician. An example for requesting this level of response is the cardiac patient requiring stat transport for cardiac catheterization. In this case, there is no scheduled transport unit available within the necessary timeframe, and first responder manpower is not required. There should be system review on all TIER TWO EMERGENCY RESPONSES to assure appropriate utilization of system.

D. Interfacility Scheduled Response

TIER THREE SCHEDULED RESPONSE

A TIER THREE SCHEDULED RESPONSE means a paramedic level transport for the purposes of transporting a patient to/from an acute or sub-acute facility. This level of transport may use the basic or expanded paramedic scope of practice.

General Principles:

- a. Transports are scheduled in advance between the sending facility and the transport provider.
- b. The sending physician, in collaboration with the transport provider, shall determine the level of care necessary for the transport.
- c. Scheduled transports may or may not be part of the emergency response system; determined by the local EMS system.
- d. Development of an IFT program using expanded scope of practice should be guided by the model.
- e. ***EMTALA rules apply to all transfers.***

The TIER THREE SCHEDULED RESPONSE should be used when there is a scheduled interfacility unit available within the timeframes necessary for appropriate patient care. The sending facility has an obligation to have the patient ready for transport when the unit arrives. An example for requesting this level of response, using basic scope of practice, is the repatriation of a patient who has received a cardiac catheterization and needs to be returned to the admitting facility. Patient requires monitoring and basic ALS level care. The advanced scope of practice transport request could accommodate the patient needing cardiac catheterization and monitoring of approved drip(s).

E. Paramedic Scope of Practice

Interfacility Transport Programs that operate under the basic scope of practice should address the general principles in Section B. Additionally, local EMS agencies' Medical Directors may apply for EMSA approval to use an expanded scope of practice for the purposes of interfacility transport. An expanded scope of practice for interfacility transport may include, but not be limited to:

1. Monitoring and adjustment of nitroglycerin infusion;
2. Monitoring of heparin infusion;
3. Monitoring of intravenous potassium chloride in concentrations greater than 20 meq/liter, but less or equal to 40 meq/liter.
4. Monitoring and adjustment of lidocaine infusion;
5. Monitoring of intravenous amiodarone hydrochloride infusion;
6. Monitoring of tube thoracostomy;
7. Stoma and tracheostomy care; and or
8. Chemical sedation for ventilator dependent and agitated patients.

A Paramedic Interfacility Transport Program should address the following:

1. Local EMS agency approval and medical oversight of paramedic interfacility transport programs.
2. Recognition of the ability of the local EMS agency to recover costs related to paramedic interfacility transport programs through program approval fees.
3. State approval of standardized expanded scope of practice for use within the local jurisdiction.
4. Intercounty agreements when system allows for cross-county interfacility transport.
5. A requirement that paramedic interfacility transport programs adequately address the following components:
 - a. scope of practice for paramedic interfacility transfers (basic or expanded)
 - b. treatment protocols

- c. staffing standards
- d. equipment
- e. training and experience standards for interfacility transport unit staff
- f. medical control
 - (1) Local EMS agency medical director role
 - (2) Base hospital / alternate base hospital role
 - (3) Provider agency medical director role
 - (4) Transferring physician role
- g. quality improvement program

Model Expanded Scope of Practice Paramedic Interfacility Transport Program

The *Model Expanded Scope of Practice Paramedic Interfacility Transport Program* is intended to serve as a template for local EMS agencies wishing to implement paramedic interfacility transfers using an expanded scope of practice prior to the adoption of paramedic interfacility transfer regulations. Included in the model are the basic components that should be a part of any interfacility transport program. These include a scope of practice, protocols, staffing standards, training, medical control and quality improvement. The specific needs for paramedic interfacility transport programs whether at the basic or expanded scope of practice level may vary. Any local EMS agency wishing to implement an *Expanded Scope of Practice Paramedic Interfacility Transport Program* should consider what expanded skills are appropriate in its area and may wish to modify the training requirements accordingly.

The training program described in the *Model Expanded Scope of Practice Paramedic Interfacility Transport Program* addresses medications and procedures, as well as additional educational requirements recommended for the paramedic using an expanded scope of practice for interfacility transport. Future developments in medicine, with accompanying additions to the scope of practice, may necessitate augmentation of education to address specific concerns related to a medication or procedure. Treatment guidelines, appropriate additional education, and quality improvement mechanisms should be in place for any added items. Some items may also be deleted from the expanded scope of practice and would be removed from the list of approved medications or procedures. The transferring physician is responsible for assuring that the level of transport chosen meets the needs of the patient.

Other interventions, such as maintenance of automated ventilators for the high-risk patient, are beyond the scope and educational process described in this document. Some interventions, such as use of an intraortic balloon pump define levels of acuity that are beyond the training and skill of the expanded scope paramedic as defined in this document, and define a subset of patients who require a specialized level of care in transport.

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Model

Expanded Scope of Practice for

Paramedic Interfacility Transport Program

A. Purpose

The purpose of an *Expanded Scope of Practice Paramedic Interfacility Transport Program* is to provide a level care for the transfer between acute care hospitals or other facilities designated by the local EMS agency of adult (age to be determined by the local EMS agency policy) patients who require medications or other procedures beyond the paramedic basic scope of practice and have been determined by the transferring physician not to require a specialized level of care beyond the local EMS agency approved for the paramedic expanded scope of practice.

B. Definition

An *Expanded Scope of Practice Paramedic Interfacility Transport Program* is a program operated by an EMS provider agency that is staffed with paramedics using specially equipped ambulance units to transfer patients whose medical needs fall within a defined scope of practice from one acute care hospital or designated medical facility to another.

C. Staffing

An *Expanded Scope of Practice Paramedic Interfacility Transport* unit shall be staffed with a minimum of one paramedic patient attendant and one EMT-I patient assistant/driver, both of whom shall have successfully completed training specified herein.

D. Equipment

An *Expanded Scope of Practice Paramedic Interfacility Transport* unit shall be a fully equipped paramedic ambulance and, in addition, shall be equipped with medications, and equipment appropriate for the expanded scope of practice as specified by the local EMS agency of jurisdiction.

E. Responsibility of Transferring Physician

The transferring physician shall be responsible for determining that the local EMS agency approved paramedic interfacility transport unit is the appropriate level of care for the patient. If additional specialized resources are required for the transfer beyond those normally provided by the paramedic interfacility transport unit, the transferring physician must assure that arrangements have been made for those resources.

Hospital and physician staff shall be oriented to the level of care provided by the paramedic staffed interfacility transport unit.

F. Medical Control

The *Expanded Scope of Practice Paramedic Interfacility Transport Program* operates under the overall medical control of the local EMS agency medical director. Each patient transfer shall be made based upon protocols approved by the local EMS agency medical director. The transferring physician shall specify those procedures within the EMS-approved protocols that are to be carried out for each transfer. In the event of an emergency occurring during transport that is outside the transferring physician's directives, the transporting unit shall revert to the local EMS agency's regular paramedic medical control policies.

G. EMSA Approval

A local EMS agency wishing to provide an *Expanded Scope of Practice Paramedic Interfacility Transport Program* must first obtain EMSA approval for the expanded scope of practice. The request shall include a description of the local EMS agency process for program approval and oversight.

H. Local EMS Agency Approval

An *Expanded Scope of Practice Paramedic Interfacility Transport Program* must have approval of the local EMS agency within whose jurisdiction the originating facility is located. A local EMS provider agency wishing to provide an Expanded Scope of Practice Paramedic Interfacility Transport Program must first obtain local EMS agency approval.

I. Recommended Expanded Scope of Practice

The expanded scope of practice for an *Expanded Scope of Practice Paramedic Interfacility Transport Program* shall be limited to the following:

1. Monitoring and adjustment of lidocaine infusion during interfacility transport;
2. Monitoring and adjustment of intravenous nitroglycerin infusion during interfacility transport;
3. Monitoring of heparin infusion during interfacility transport;
4. Monitoring of intravenous ≤ 40 meq. potassium chloride during interfacility transport;
5. Monitoring of intravenous amiodarone hydrochloride during interfacility transport;
6. Monitoring of thoracostomy tube during interfacility transport;
7. Stoma and tracheostomy care; and/or
8. Chemical sedation for ventilator dependent and agitated patients.

J. Recommended Protocols for Expanded Scope of Practice

1. Intravenous Infusion of Lidocaine

- a. Patient shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- b. Signed transfer order from the transferring physician must be obtained prior to transport. Transfer order must provide for maintaining the lidocaine infusion during transport and must specify any circumstances under which the rate will be changed or the infusion discontinued.
- c. If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc), paramedic may restart the line as delineated in the

Standard Strength

1 Gram/250cc D5W or NS or 2
Gm/500cc

cc/hr	mg/min
15	1
30	2
45	3
60	4

transfer orders. Caution will be used to prevent inadvertent overdose of medication by using a plain IV to restart the infusion.

- d. Infusion must be regulated by a mechanical pump familiar to the paramedic. If pump failure occurs and cannot be corrected, paramedic shall discontinue lidocaine infusion and notify transferring physician or, in the event transferring physician is unavailable, notify base physician.
- e. The following parameters shall apply to all patients with pre-existing lidocaine infusion:
 - (1) Infusion fluid shall be either NS or D5W. Medication concentration shall be either
 - 1 gram/250cc or
 - 2 grams/500cc
 - (2) Regulation of the infusion rate shall occur within the parameters as defined by the transferring physician, but in no case will changes be in greater than 1 mg/minute increments every 3 - 5 minutes.
 - (3) Paramedic may initiate two infusion rate changes prior to consulting with the base hospital. Any additional changes must be made only with base hospital approval.
 - (4) INFUSION RATE MAY NOT EXCEED 4 mg/min.
 - (5) Vital signs shall be monitored as indicated in transfer order.

2. Intravenous Infusion of Nitroglycerin

- a. Patient shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- b. A non-invasive blood pressure monitor device that will record and print out blood pressure readings every five (5) minutes shall be utilized.
- c. Signed transfer order from transferring physician must be obtained prior to transport. Transfer order must provide for maintaining the nitroglycerin infusion during transport.
- d. If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.), paramedic may restart line as delineated in transfer order. Caution will be used to prevent inadvertent overdose of medication by using a plain IV to restart the infusion.
- e. Infusion must be regulated by a mechanical pump familiar to the paramedic. If pump failure occurs and cannot be corrected, paramedic shall discontinue nitroglycerin infusion and notify transferring physician or, in the event transferring physician is unavailable, notify base physician.
- f. The following parameters shall apply to all patients with pre-existing nitroglycerin infusions:

cc/hr	mcg/min	
	25 mg/250cc or 50mg/500cc	50 mg/250cc
	half-strength concentration = 100 mcg/1cc	full-strength concentration = 200 mcg/1cc
1	1.7	3.3
2	3.3	6.7
3	5.0	10.0
4	6.7	13.3
5	8.3	16.7
6	10.0	20.0
7	11.7	23.3
8	13.3	26.7
9	15.0	30.0
10	16.7	33.3
11	18.3	36.7
12	20.0	40.0
13	21.7	43.3
14	23.3	46.7
15	25.0	50.0
16	26.7	
17	28.3	
18	30.0	
19	31.7	
20	33.3	
22	36.7	
24	40.0	
26	43.3	
28	46.7	
30	50.0	

- (1) Infusion fluid shall be either NS or D5W.

Medication concentration shall be either:

Half strength: 25mg/250cc, or 50mg/500cc

Full strength: 50mg/250cc.

(2) Regulation of the infusion rate shall be within parameters specified by transferring physician, but in no case shall changes be in greater than 5mcg/minute increments every 5 - 10 minutes

(3) Paramedic may initiate two infusion rate changes prior to consulting with the base hospital. Any additional changes must be made only with base hospital approval.

(4) INFUSION RATE MAY NOT EXCEED 50 mcg/min.

(5) In case of severe hypotension, medication infusion shall be discontinued and notification made to both transferring physician and base hospital.

3. Intravenous Infusion of Heparin

- a. Patient shall be placed and maintained on cardiac and pulse oximetry or capnography monitors during transport.
- b. Signed transfer order from the transferring physician must be obtained prior to transport. Transfer order must provide for maintaining the heparin infusion during transport and must specify any circumstances under which the rate will be changed or the infusion discontinued.
- c. If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc), paramedic may restart line as delineated in transfer orders.
- d. Infusion must be regulated by a mechanical pump familiar to the paramedic. If pump failure occurs and cannot be corrected, paramedic shall discontinue lidocaine infusion and notify transferring physician or, in the event transferring physician is unavailable, notify base physician.
- e. The following parameters shall apply to all patients with pre-existing heparin infusion:
 - (1) Medication concentration shall not exceed 100 units/cc or IV fluid (25,000 units/250cc or 50,000 units/500cc).
 - (2) Infusion rate must remain constant during transport with no regulation of rate being performed by paramedic, except for discontinuation of infusion (e.g., as in a case of bleeding).
 - (3) INFUSION RATE MAY NOT EXCEED 1,600 UNITS PER HOUR.
 - (4) Vital signs shall be monitored as indicated in transfer order.

4. Intravenous Infusion of Potassium Chloride (KCl)

- a. Patient shall be placed and maintained on cardiac monitor during transport.
- b. Signed transfer order from the transferring physician must be obtained prior to transport. Transfer order must provide for maintaining the potassium chloride infusion during transport and must specify any circumstances under which the rate will be changed or the infusion discontinued.
- c. If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc), paramedic may restart line as delineated in transfer

orders. Caution will be used to prevent inadvertent overdose of medication by using a plain IV to restart the infusion.

- d. Infusion must be regulated by mechanical pump familiar to the paramedic. If pump failure occurs and cannot be corrected, paramedic shall discontinue potassium chloride infusion and notify transferring physician or, in the event transferring physician is unavailable, notify base physician.
- e. The following parameters shall apply to all patients with pre-existing potassium chloride infusion:
 - (1) Medication concentration shall not exceed 40 meq per liter of IV fluid.
 - (2) Infusion rate must remain constant during transport with no regulation of rate being performed by paramedic.
 - (3) INFUSION RATE MAY NOT EXCEED 10 meq PER HOUR.
 - (4) Vital signs shall be monitored as indicated in transfer order.

5. Intravenous Infusion of Amiodarone Hydrochloride

- a. Paramedics may not initiate amiodarone hydrochloride infusions.
- b. Patients shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- c. Signed transfer orders from the transferring physician must be obtained prior to transport. Transfer orders must provide for maintaining the amiodarone hydrochloride infusion during transport.
- d. If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc), the paramedic may restart the line as delineated in the transfer orders.
- e. Infusions must be regulated by a mechanical pump familiar to the paramedic. If a pump failure occurs and cannot be corrected, the paramedic is to discontinue the amiodarone hydrochloride infusion and notify the transferring physician or the base physician if the transferring physician is not available.
- f. The following parameters shall apply to all patients with pre-existing amiodarone hydrochloride infusion:
 - (1) Medication concentration must be a minimum concentration of 150mg/250ml (0.6 mg/ml); unstable in more dilute solutions.
 - (2) Infusion rates must remain constant during transport with no regulation of rates being performed by the paramedic, except for the discontinuation of the infusion.
 - (3) Infusion rates may vary between 0.5 – 1.0 mg/min.
 - (4) Physician orders must specify the infusion rate.
 - (5) Vital signs are to be monitored as indicated in the transfer orders, not less frequently than every 15 minutes.
 - (6) Y – Injection incompatibility; the following will precipitate with amiodarone hydrochloride
 - Heparin Sodium
 - Sodium Bicarbonate
 - (7) Amiodarone hydrochloride intravenous infusion monitoring is not approved for patients < 14 years old without base physician contact.
 - (8) In infusions longer than one hour, amiodarone hydrochloride concentrations should not exceed 2mg/mL unless a central venous catheter is used.

6. Monitoring of Thoracostomy Tube

- a. Patient shall be placed and maintained on cardiac and pulse oximetry or capnography monitors during transport.
- b. Signed transfer order from the transferring physician must be obtained prior to transport. Transfer order must specify the maintenance of chest tube either to gravity or mechanical suction drainage. If mechanical suction drainage, the amount of mechanical suction must be specified.
- c. Mechanical suction rate must remain constant during the transport with no regulation of the rate being performed by paramedic.
- d. Collection receptacle must be kept below level of the chest to prevent drained fluid from re-entering the pleural space. Do not allow the collection receptacle to tip over.
- e. If hemorrhage occurs through the chest tube, observe for signs and symptoms of shock and treat according to protocol.

Complications:

- a. If the thoracostomy tube is partially pulled out:
 - Do not push the tube back into the chest.
 - Secure the site.
- b. If the thoracostomy tube is completely pulled out, place an occlusive dressing over the insertion site.
- c. If air leaks are present, check all connections.
- d. If the patient becomes dyspneic:
 - Assess breath sounds
 - Contact base hospital (needle thoracostomy may need to be performed).

Precautions

- a. Avoid pulling on thoracostomy tube as this can cause accidental dislodgement of the tube.
- b. Do not restrict gravity or suction drainage from the chest by the use of clamps, dependent loops or kinks in tubing as this will interfere with flow of drainage and may lead to increased pleural pressure or formation of clots.
- c. Do not disconnect the drainage system or puncture tubing. Tape all connections securely to prevent violation of sterility and loss of negative pressure.

7. Stoma and Tracheostomy Care

- a. Temporary or permanent placement of a tracheostomy tube is often necessary to maintain an open airway.
- b. Patients with tracheostomy tubes or stomas should not be intubated orally.
- c. Suctioning of surgical airways is often required to attempt to clear and maintain an open airway.
- d. Administration of inhaled medications will need to be given via the stomas or tracheostomy tubes.
- e. Never attempt to reinsert a dislodged tracheostomy tube. Trying to do so may cause a false channel in the subcutaneous tissue anterior to the trachea. Compression of the trachea may result.

Suctioning

Equipment:

1. Appropriate size suction catheter
2. Suction unit with adjustable suction capacity
3. Manual resuscitation (Bag-valve-mask device) with oxygen supply
4. 5 cc syringe filled with sterile saline

Contraindication: Use of demand valve

Procedure:

1. Adjust suction to 120 - 150 mm Hg
2. Apply sterile gloves.
3. Flush suction catheter with saline to lubricate tip and establish patency of suction catheter.
4. Remove the T-tube if a tracheostomy patient is on humidified oxygen.
5. Ventilate the patient with 100% oxygen several times.
6. Insert the suction catheter into the stoma or tracheostomy opening with the suction off (the thumb hole open). The short length of the tracheostomy tube facilitates suctioning. The catheter may be directed through the right or left bronchus by having the patient turn his/her head to the opposite side.
7. Apply suction by occluding the thumb hole while slowly withdrawing the catheter in a twisting motion. Suction of a tracheostomy tube should take no longer than 10 seconds for the adult patient.
8. If mucus plugs or thick secretions are present, the instillation of 3 - 5 cc of sterile saline may be helpful.
9. Hyperventilate with 100% O₂.
10. Check breath sounds.
11. Suctioning can stimulate a cough reflex. Allow the patient to cough. Be prepared to suction or catch secretions from the tracheal opening. Recheck breath sounds.

Stoma Intubation

Equipment:

1. appropriate sized cuffed and uncuffed ET tubes
2. bag-valve-mask
3. appropriate sized suction catheters
4. oxygen supply
5. suction equipment with adjustable suction capacity

Contraindication: Use of demand valve

Procedure:

1. Select the largest endotracheal tube that will fit through the stoma without force. Check the cuff, unless an uncuffed tube is being used.
2. Hyperventilate with 100% oxygen using a bag-valve-mask device with the face mask fitted over the stoma. Do not use demand valve.

3. Wear sterile gloves. Do not use a stylet. It is not necessary to lubricate the tube.
4. Suction, if necessary.
5. Pass the endotracheal tube $\frac{1}{2}$ the length of the endotracheal tube and inflate the cuff. The pharynx has been bypassed, so the tube will protrude from the neck several inches.
6. Hold the tube in place, watch for chest rise with ventilation.
7. Secure the tube and hyperventilate.
8. Auscultate the lung fields. Check the neck for subcutaneous emphysema, indicating false passage.
9. Allow no longer than 30 seconds for the procedure.

8. Chemical sedation for ventilator dependent and agitated patients.

- a. Only paramedics will be permitted to utilize chemical sedation without base hospital contact. Midazolam will be used for:
 - (1) ventilator dependent patients requiring chemical sedation or restraint due to agitation, restlessness and/or anxiety that is compromising the patient's stability.
 - (2) agitated patients requiring chemical sedation or restraint due to restlessness and/or anxiety that is compromising the patient's stability

Indications

Subjective: Any or all of the following symptoms:

- 1) Agitation
- 2) Restlessness
- 3) Anxiety

Objective:

- 1) Changes in Cardiac Monitor
- 2) Increase in level of distress
- 3) Change in vital signs
- 4) Need for invasive procedure
- 5) Decrease in pulse oximetry

Procedure

Ventilator patients:

1. Apply soft, four – point restraints.
2. Continuously monitor oxygen saturation, ETCO₂, heart rate, blood pressure, and LOC.
3. Administer midazolam as per physician orders, if no orders, use guidelines below.
4. Guidelines for the administration of midazolam as follows:

Adult: (Age 12 and older):

- a) 2 – 4 mg, slow IV push
- b) May repeat intravenous dose every 20 – 30 minutes as needed for sedation. Maximum total dose is 10mg.
- c) Use IM only if IV access is unavailable, dose is 3 – 5 mg, given deep into a large muscle mass. Maximum total dose is 10 mg.

- d) May repeat IM dose every 60 – 90 min. as needed for sedation.

Agitated Patients

1. Continuously monitor oxygen saturation, ETCO₂, heart rate, blood pressure, and LOC.
2. Administer midazolam as per physician orders, if no orders, use guidelines below.
3. Guidelines for the administration of midazolam as follows:
Adult: (Ages 12 and over)
 - a) 2 – 4 mg, slow IV push
 - b) May repeat with smaller intravenous dose of 1 – 2 mg every 20 – 30 minutes as needed for sedation. Maximum total dose is 6 mg.
 - c) Use IM only if IV access is unavailable, dose is 3 – 5 mg, given deep into a large muscle mass.
 - d) May repeat with smaller IM dose of 1 – 3 mg every 60 – 90 min. as needed for sedation. Maximum total dose is 6 mg

Precautions

1. Assess for sedative effects. Midazolam is 3 – 4 times more potent than diazepam.
2. The half-life of midazolam is < 2 hours.
3. Onset of action is usually 2 – 5 minutes. Wait after each incremental dose to assess effect. A total dose greater than 6 mg is usually not necessary.
4. Serious cardiorespiratory adverse events have occurred. These include respiratory depression, apnea, respiratory and/or cardiac arrest. Resuscitative equipment should be immediately available.
5. Hypotension has been noted, particularly with concomitant narcotic administration.
6. Use 25 - 33 % less if narcotics are co-administered or administered prior to arrival by hospital staff.
7. Do not administer midazolam, or decrease the dose by 50% if the patient is hypovolemic.

K. Training Program

An *Expanded Scope of Practice Paramedic Interfacility Transport Program* shall include a local EMS agency approved training program that must be successfully completed by all paramedic and EMT-I personnel assigned as required personnel to an *Expanded Scope of Practice Paramedic Interfacility Transport* unit.

1. Didactic - paramedic
 - a. Minimum number of hours for course is 80 didactic hours plus 40 clinical hours.
 - b. Method of assessing successful course achievement/evaluation must be described.
 - c. Principle instructor of paramedic training must be a registered nurse or physician knowledgeable in the subject matter.
 - d. Course content to include:
 - (1) **Breathing and airway management**
 - (a) Pulmonary anatomy and physiology

- Upper and lower airway anatomy
- Mechanics of ventilation
- Gas exchange
- (b) Respiratory pathophysiologies (including signs and symptoms)
 - Respiratory failure
 - Atelectasis
 - Pneumonia
 - Pulmonary embolism
 - Pneumothorax/hemothorax
 - Pleural effusion
 - Chronic obstructive pulmonary disease
 - Adult respiratory distress syndrome (ARDS)
- (c) Breathing Assessment
 - Obtaining a relevant history
 - Physical exam
 - Breath sounds
 - Percussion
 - Pulse oximetry
 - Capnography (end tidal CO₂ monitoring)
- (d) Tracheostomies
 - Types of tracheostomies
 - Tracheostomy care
- (e) Endotracheal intubation – review of procedure
- (f) Esophageal tracheal airway device (combitube)
- (g) Laryngeal mask airway device
- (h) Needle cricothyrotomy – review of procedure
- (i) Pharmacological agents
 - Bronchodilators
 - Anti-inflammatory agents
 - Antibiotics
 - Sedation
 - RSI
- (j) Chest tubes
 - Operation of and troubleshooting
 - Indications for and positioning of dependent tubing
 - Varieties available
 - Gravity drainage
 - Suction drainage
 - On-going assessments of drainage amount and color
- (k) Pleural decompression – review of procedure
- (l) Portable ventilators
 - Principles of ventilator operation
 - Procedures for transferring ventilator patients
 - Complications of ventilator management
 - Troubleshooting and practical application
- (2) Laboratory values**
 - (a) Arterial blood gases
 - The pH scale

- Bodily regulation of acid-base balance
- Acid-base derangements
- Practical evaluation of arterial blood gas results
- (b) Review of the following laboratory tests to include normal values, possible implications of abnormal values, and interrelationships.
- (c) Urinalysis
 - Normal output
 - Specific gravity
 - PH range
- (d) Complete blood count (CBC)
 - H&H
 - RBC
 - WBC with differential
 - Platelets
- (e) Other
 - Acid phosphate
 - Albumin
 - Alkaline phosphate
 - Amylase
 - AST
 - Bilirubin
 - Calcium
 - Chloride
 - Cholesterol
 - CK
 - Creatinine
 - Globulin
 - Glucose
 - Lactate
 - LDH
 - Lipase
 - Magnesium
 - Phosphate
 - Potassium
 - Protein, total
 - PT & PTT
 - SGOT
 - Sodium
 - Triglycerides
 - Troponin
 - Urea nitrogen
 - Uric acid
- (f) Practical application of laboratory values to patient presentations.

(3) Pharmacology and infusion therapies:

- (a) Review of common medications encountered in the critical care environment to include those in the following categories:
 - Analgesics

- Antianginals
- Antiarrhythmics
- Anticoagulants
- Antihypertensives
- Bronchodilators
- Paralytics
- Sedatives
- Thrombolytics
- Vasopressors
- Volume expanders
- (b) Review of drug calculation math
 - IV bolus medication
 - IV infusion rates
 - By volume
 - By rate
- (c) Detailed instruction (drug action and indications, dosages, IV calculation, adverse reactions, contraindications and precautions) on following medications:
 - IV NTG
 - Heparin
 - KCl infusion
 - Lidocaine
- (d) Blood and blood products
 - Blood components and their uses in therapy
 - Administrative procedures
 - Administration of blood products
 - Transfusion reactions – recognition, management

(4) Infusion pumps:

- (a) Operation of, indications for and troubleshooting
- (b) Discussion of various pumps that may be encountered
- (c) Discussion of prevention of “run-away” IV lines while transitioning
- (d) Practical application of transfer of IV infusions, setting drip rates and troubleshooting
- (e) Procedures to be used when reestablishing IV lines

(5) Hemodynamic monitoring and invasive lines:

- (a) Non-invasive monitoring
 - NIBP
 - Pulse oximetry
 - Caponography
 - Heart and bowel sound auscultation
- (b) Invasive monitoring (use, care, and complication management)
 - Arterial
 - Swan-Ganz
- (c) Vascular access devices

~~Hickman-Broviae~~
~~Porta-cath~~

- (d) Dressing and site care
- (e) Management of complications

(6) 12-lead EKG interpretation:

- (a) Essential 12 lead interpretation
- (b) Acquisition and transmission
- (c) Acute coronary syndromes
- (d) The high acuity patient
- (e) Bundle branch block and the imitators of ACS

(7) Implanted cardioverter defibrillators:

- (a) Eligible populations
- (b) Mechanism
- (c) Complications and patient management

(8) Cardiac pacemakers

- (a) Normal operations, troubleshooting and loss of capture
 - Implanted devices
 - Unipolar and bipolar
- (b) Temporary pacemakers
- (c) Transcutaneous pacing

(9) Indwelling tubes: (the following should be discussed, described, and preferably demonstrated and/or viewed)

- (a) Urinary:
 - Foleys
 - Suprapubic
- (b) Nasogastric (NG)
- (c) PEG
- (d) Dobhoff

(10) Isolation issues:

- (a) Pathogens
 - HIV
 - Hepatitis
 - Vancomycin resistant enterococcus (VRE)
 - Multiple-antibiotic resistant bacteria (MRSA)
 - Tuberculosis (TB)
 - Others as appropriate
- (b) Procedures for self-protection and decontamination

- (c) Exposure procedures

(11) Shock and multi-system organ failure

- (a) Pathophysiology of shock
- (b) Types of shock
- (c) Shock management
- (d) Multi-system organ failure
 - Recognition and management of sepsis
 - Recognition and management of disseminated intravascular coagulation (DIC)

(12) Special population considerations:

- (a) Renal and peritoneal dialysis
- (b) OB
- (c) Neurological
- (d) Trauma

(13) Role of interfacility transport paramedic:

- (a) Healthcare system explained
- (b) Critical care vs. 911 system
- (c) Hierarchy of hospital/facility nursing staff
- (d) Hospital charts – where to look for what
- (e) Physician orders vs. ALS protocols

(14) Medical–legal issues:

- (a) EMTALA
- (d) Review of CA paramedic scope of practice
- (c) Consent issues
- (d) DNR and physician orders for modified resuscitation

(15) Operational procedures:

- (a) Dispatching and deployment
- (b) Recognition of patients who require a higher level of care
What to do if you are not comfortable with a
transport/patient. Example: When a patient's needs exceed
the staffing available on the unit.
- (c) Review of specific county policies
- (d) Obtaining and receiving reports from sending/receiving
facilities
- (e) Re-calculate hanging dose prior to accepting patient
- (f) Notification to receiving hospital while en route (cell phone)
Patient status and ETA
- (g) What to do if the patient deteriorates
- (h) Diversion issues
- (i) Wait and return calls – continuity of care issues

(16) Documentation:

- (a) Patient consent forms
- (b) Physician order sheets
- (c) Critical care flow sheets

2. Clinical – paramedic

- a. Minimum number of hours for course is 40 clinical hours.
- b. Clinical rotation to include the following minimums:
 - (1) 8 hours with respiratory therapist
 - (2) Ride-along observation of 4 interfacility critical care transports

3. Didactic – EMT-I driver/assistant

- a. Minimum four (4) hours didactic and clinical instruction specific to the skills needed to assist a single paramedic in-patient care delivery during *Expanded Scope of Practice Paramedic Interfacility Transport* calls.
- b. Principle instructor of EMT-I training may be a paramedic, registered nurse or physician.

L. Quality Improvement Plan

1. An *Expanded Scope of Practice Paramedic Interfacility Transport Program* shall have a written QI plan approved by the local EMS agency.
2. A Registered Nurse or physician shall have clinical oversight of the QI plan.
3. Provider's QI staff shall evaluate all *Expanded Scope of Practice Paramedic Interfacility Transport* for medical appropriateness. Review shall include:
 - (a) Review of transferring physician's orders and evidence of compliance with orders.
 - (b) Documentation of vital signs, including frequency.
 - (c) Documentation of any side effects/complications including hypotension, bradycardia, increasing chest pain, arrhythmia, altered mental status, and interventions with these events.
 - (d) Documentation of any unanticipated discontinuation or rate adjustments of infusions along with rationale and outcome.
 - (e) Review of any base contact for medical direction.
4. Unusual occurrences shall be communicated promptly to the local EMS agency.
5. Educational needs shall be assessed.
6. Reports summarizing QI activity, identified trends, and resolutions shall be provided as required by the local EMS agency.
7. ***The Program's QI Program shall be integrated into the local EMS agency's QI Program.***